BLM Handbook H-3150
Onshore Oil and Gas Geophysical Exploration Surface Management Requirements

Table of Contents

3. Sundry Notices and Reports on Wells, Form 3160-5

4. Terms and Conditions for Notice of Intent to Conduct Geophysical Exploration, Form 3150-4a

5. Model Format for Approval for Use of Earthmoving Equipment

6. Checklist for Oil and Gas Geophysical Exploration

7. Listing of ALMRS (Case Recordation) Data Element (DE) 2910 Action Codes Applicable to Geophysical Exploration in the Lower 48 States

8. Receipt of Notice of Intent Letter

9. Cultural Resource Procedures for Geophysical Operations

10. Resource Protection Offsets for Cultural Resource Structures and Other Facilities

11. Compliance Inspection for Oil and Gas Geophysical Exploration Operations

12. Request for Status of Operations

13. Notice of Completion of Oil and Gas Exploration Operations, Form 3150-5

14. Example of a Receipt of Notice of Completion Letter

15. Example of an Inspection Notification Letter

I. Operator Filing Procedures. All oil and gas geophysical exploration operations on surface administered by the Bureau of Land Management (BLM) shall be authorized using the Notice of Intent (NOI) process. In those situations where Federal minerals are underlying private surface and the private surface owner's consent is obtained, the BLM is not to become involved. However, when landowner consent for access to the surface cannot be obtained for geophysical exploration operations on a Federal lease by the lease operator, the geophysical operation is to be authorized using the Sundry Notice process.

Adequate bonding for all operations must be provided by the operator.

A. Notice of Intent Form. The operator shall complete, sign, and file an NOI, Form 3150-4 (Illustration 1). The submittal shall include maps (minimum scale of 1/2 inch equals 1 mile or 1:100,000) showing the location of the activity and proposed access routes on public lands, if maps are available. Pursuant to this requirement, a memorandum dated April 29, 1975, from the Rocky Mountain

Regional Solicitor on Geophysical Exploration Operations states, ". . . if requiring the operator to file maps giving the location of his exploration line and access routes and requiring prior written approval for other type dirt work and requiring advance written notice of any proposed changes in the operator's exploration plan are necessary for the District Manager's proper supervision of the operator's exploration operations, then you have full authority to require these things of the operator."

Filing procedures are summarized in Illustration 2 and may be provided to operators as a useful guide.

B. Sundry Notice Process. A Federal oil and gas lease allows the lessee/operator to conduct geophysical exploration operations as a part of lease exploration. A lessee may conduct exploration on Federal, private, or State surface in pursuit of Federal oil and gas lease exploration/develop-ment. A Sundry Notices and Report on Wells, Form 3160-5 (Illustration 3) is to be submitted, along with the NOI describing the proposed operation. This process is to be required for approval of geophysical exploration operations that occur in conjunction with lease or unit exploration/development. For operations on private surface where access is denied, the mineral lessee/ operator must provide the surface owner with copies of the Sundry Notice, NOI, proof of bonding, and notification of their intent to enter onto the lands to conduct lease/unit operations.

The BLM shall not become involved in resolving differences between a private surface owner/lessee and the operator. If the private surface owner/lessee denies access after all negotiations with the operator have failed, the procedures set out in Federal regulations 43 CFR 3814 and as follows apply:

Where the minerals and the right of access have been reserved by the United States [e.g., Act of July 17, 1914 (43 CFR 3813), the Stockraising Homestead Act of 1916, the Desert Land Act of 1877, as amended (43 CFR 2520), mineral estate reserved under FLPMA, etc.], the lessee or the lessee's designated operator must employ one of the following methods to acquire access to private or State surface:

1. Sundry Notice. When the geophysical exploration operator is the Federal lessee or designated operator of the lessee, it is to file a Sundry Notice (Form 3160-5) with the BLM and provide notification to the surface owner by certified mail that it intends to enter onto the lands and conduct lease operations. The lessee/operator must then submit proof to the BLM authorized officer that the surface owner has been notified. The lessee/ operator must also submit proof to the BLM authorized officer that it has

a current and adequate bond payable to the United States for use by the surface owner for damages caused during the exploration operations. The authorized officer must give the surface owner 30 days to comment on the proposed action before approving the Sundry Notice.

2. BLM Denied Access. When BLM personnel are denied access to a Federal lease, the authorized officer is to notify the surface owner of the pertinent regulations and document all contacts with the surface owner. If all efforts of negotiation for entry of BLM personnel onto the private surface fail, an order from the District Court is needed. The first step is to advise the appropriate Regional or Field Solicitor of the situation. A certified copy of the original patent for the lands and signed notarized affidavits from each BLM employee who has been refused entry onto the private surface are needed to initiate court action. It may be helpful in prosecuting the BLM case to obtain affidavits from operators who may have also been denied access. The affidavits must explain the reason(s) why entry is needed for each person, the dates and times the surface owner was contacted, and the date entry was refused.

3. Lessee Denied Access. When a lessee/operator is denied access, it should follow a similar process as described in I.B.2., above. In the event the lessee/operator must obtain a court order, the lessee/operator will be required to file the same proof for right of entry. It is not the BLM's role to file documents on behalf of the lessee/operator.

C. Prework Conference. The operator shall attend a prework conference or participate in a field inspection unless it is deemed unnecessary by the authorized officer. Written documentation of the waiver shall be provided in the case file. The terms and conditions for geophysical operations, Form 3150-4a (Illustration 4) shall be completed and signed prior to starting exploration operations.

A model format for approval for use of earthmoving equipment (Illus-tration 5) shall be used for approval by the authorized officer when such equipment is to be used during geophysical operations. Approval is required

prior to the operator commencing dirt work, snow removal, or cutting and removal of vegatation. Offices may adopt their own format, as appropriate.

D. Notification. After the NOI is approved, the operator shall notify the BLM at least 3 days, and no more than 14 days, before entering onto public lands. If weather or environmental conditions have changed, additional protection measures may be necessary.

II. Approval Procedures. A sample checklist for tracking work completed within the office on a filed NOI is provided in Illustration 6. No nationwide format will be developed, but local offices can develop such a checklist as needed.

A. Adjudication.

1. Date stamp the NOI and all attached material.

2. Assign serial number: Access Automated Land and Mineral Record System (ALMRS) Case Recordation and assign serial number.

3. An example of a suggested file folder label format is:

3150 ALMRS Serial No.

OPERATOR NAME State No. 005-88001 (optional)

4. Confirm State number with appropriate State agency, if applicable.

5. Verify that the type and amount of the bond is appropriate. See Manual Section 3104 and Handbook H-3104-1 - Bonds. In most cases, the geophysical contractor will be the bonded party and, thus, the operator. When an oil company (lessee) is the bonded party, the geophysical contractor must provide a written statement from the lessee describing the contractor as the designated agent and provide proof of notification to the bonding company for this action.

The regulations at 43 CFR Subpart 3154 address bonds for geophysical exploration operations. Bonds for statewide/nationwide exploration operations are handled by the State Office staffs. Bonds for single exploration operations are handled by the District or Resource Area Office staffs.

Holders of individual, statewide, or nationwide lease bonds are allowed to conduct exploration operations on their leaseholds without separate bond coverage. Holders of statewide and nationwide lease bonds wishing to conduct exploration operations on lands they do not have leased either may obtain a rider to their bond to include oil and gas exploration operations, or obtain separate geophysical exploration bond coverage. In either situation, the BLM must ensure that adequate bond coverage exists to address all exploration liabilities. In addition, a lessee must provide written notification of the designated agent to the bonding company, with a copy to the BLM, prior to BLM accepting the bond.

6. Enter information in the Resource Area Oil and Gas Exploration Operations Log. Enter the information into ALMRS Case Recordation in Case Type 315100. The appropriate action codes for data entry are listed in Illustration 7.

B. Compliance With 5-Working-Day Notification Requirement. 43 CFR 3151.1 provides that the NOI must be processed and the terms and conditions attached within 5 working days or the operator must be notified in writing of the reasons for the delay. It is an objective of the BLM that most pro-posed operations within a resource area be authorized within that timeframe. Delayed operations should be the exception rather than the rule. A prework conference shall be held unless there is a specific need to waive it.

1. All NOI's shall be reviewed promptly upon their receipt to determine if they are complete. If the authorized officer determines an NOI is not complete, the operator shall be notified within 5 working days, by telephone and in writing (certified mail, return receipt requested), of the deficiencies and steps needed to correct them.

2. If there are no deficiencies in the NOI, the operator shall be notified by the authorized officer within 5 working days to schedule a pre-work conference or field inspection prior to beginning of field operations. When, in unusual circumstances, the prework conference is waived by the authorized officer, a date shall be set to mail the Terms and Conditions (Form 3150-4a) to the operator for signature. Written documentation of the waiver shall be provided in the case file.

3. If the NOI cannot be processed within 5 working days of the filing date, the authorized officer shall specify:

a. The reason for the delay.

b. When the processing will be completed.

For instance, the notification may include a discussion of the reasons why the BLM staff is unable to complete the cultural, biological, etc., evaluations within the 5 working days. The notice shall indicate that the operator may request a status report as needed.

4. An informal telephone call to the operator, accompanied by a telephone confirmation memorandum to the file, may be all that is necessary to correct any deficiencies, schedule prework conference, or document that the NOI cannot be processed within 5 working days. If the operator wants the request in writing, or if the authorized officer requires written documentation from the operator, a letter containing the information described above should be sent. A sample format for a letter that has been used successfully is provided in Illustration 8.

C. Review of Existing Information.

1. Determine land status including surface ownership, existence of any surface use restrictions by BLM concerning oil and gas leasing, or withdrawals by other Federal agencies. However, be aware of the policies established in BLM Manual 3150. Lands are not automatically closed to geophysical exploration operations when they are closed to leasing or surface occupancy.

2. Identify any potential surface use conflicts between the proposed operation and land use plan restrictions, wildlife habitat areas, range improvements, rights-of-way structures, fire danger, populated areas, hunting seasons, off-road vehicle restrictions, or any other special designations. The potential conflicts between resource values and geophysical operations can usually be reconciled.

See Illustrations 9 and 10 for relevant information. Illustration 10 only considers direct effects to historic properties. Consultation with the State Historic Preservation Officer (SHPO) concerning determinations of effect must consider indirect effects as well. In addition, such consultations should also be used to determine if there are specific historic property types not referred to in Illustration 10 that have been identified and require different considerations.

3. Assemble existing environmental information. Note the policies concerning existing information established throughout BLM Manual 3150.

One purpose of the environmental review process is to develop mitigation measures or avoidance alternatives rather than to generate additional inventories of Federal lands. A clear understanding of this distinction will affect the nature and extent of data collection activities which may be required.

a. Determine if the proposed geophysical activity is a casual use or is otherwise exempt from the National Environmental Policy Act of 1969 (NEPA). If so, document the finding and issue the NOI.

b. Determine if the proposed geophysical activity is categorically excluded from NEPA. If so, document the finding and issue the NOI.

c. Review relevant existing EA's and EIS's to determine if the proposed action is already fully covered. If an existing EA or EIS fully covers the proposed action, then a decision on the action may be made without any further NEPA analysis. Document this finding through an Administrative Determination and issue the NOI.

4. Notify other agencies as necessary.

5. If special resources have been identified in the area of the survey, environmental reviews should then be initiated. As mentioned previously, a majority of geophysical operations can proceed without an extensive environmental review process, particularly since mitigation measures and avoidance alternatives can often be readily devised.

D. Environmental Analysis and Documentation. The NOI's on public lands under BLM jurisdiction must be reviewed for NEPA compliance. The EA process need not be time-consuming nor complicated. The level of assessment should be commensurate with the anticipated impacts and the degree of public concern. The manager responsible for preparing the EA determines the appropriate format within established standards. The EA's may range from a short (1 or 2 pages) finding of no significant impact (FONSI)/Decision Record document characterized by only a few headings to a relatively long (10 to 15 pages) document characterized by several headings and subheadings. Refer to BLM Handbook H-1790-1 - National Environmental Policy Handbook, Chapter IV, for more information on formats. The environmental effects of most geophysical proposals can be adequately addressed by using the short document format.

Each resource specialist should independently evaluate and complete a resource assessment as soon as the NOI is filed. This review should be conducted simultaneously by the various disciplines in order to speed up the review process. Any review methods developed in the resource area in advance of NOI filings is encouraged. Some resource areas have developed an overlay listing appropriate

stipulations that pertain to potential geophysical operations.

In addition, all resource evaluations, including informal and formal consultations with outside parties (e.g., SHPO, FWS) shall begin as soon as the NOI is filed.

Follow the steps below in performing the analysis and documentation:

1. Preparation of environmental assessment.

a. Review existing information to determine if:

(1) there are resource conflicts present along the proposed survey line. Note the specific policies established in BLM Manual 3150.21D and 3150.32C.

(2) the information demonstrates that the resources present along the proposed survey line are likely to be adversely affected by the type of survey planned.

b. If a review of the existing information by BLM, including informal consultations with outside agencies, does not demonstrate the presence of a resource conflict and likely adverse effects, document the information reviewed and complete the processing of the EA and NOI.

c. If a review of the existing information by BLM does demonstrate the presence of a resource conflict and likely adverse effects, document the information.

d. Immediately inform the operator of the nature and known extent of the potential impact, and where possible suggest avoidance procedures that would mitigate potential resource impacts.

e. Obtain input from other surface management agencies when BLM is processing a NOI for them.

f. Prepare the EA and appropriate documentation.

2. Evaluate the standard terms and conditions on Form 3150-4a (Illustration 4) to determine if they adequately mitigate potential resource impacts identified in the EA.

3. Establish special conditions which may be needed or recommended as a result of the environmental analysis or land use plan.

4. Prepare the FONSI and Decision Record for the authorized officer's signature.

E. Prework Conference or Field Inspection.

1. Schedule and conduct a prework conference and/or field inspection. The terms and conditions must be signed by the party chief/manager. The person who

submits the NOI may not be available when the crew begins work. It is imperative that the party chief/manager understand how and where terms and conditions apply.

2. If, in unusual circumstances, the prework conference is waived, mail a copy of the terms and conditions to the operator for signature.

3. Contact affected agencies and land users regarding any modifications, as appropriate.

4. Document all coordination activities and provide copies to interested parties.

5. Obtain approval of BLM authorized officer.

III. Monitoring During Exploration Operations.

A. Compliance Inspections.

1. Make periodic field inspections during the operation to ensure compliance with the terms and conditions (e.g., material storage, distance from water wells, proper hole plugging, reclamation, clean-up, etc.).

2. When noncompliance items are discovered, notify the operator verbally and then follow up with written notification by certified mail, return receipt requested. For a complete breakdown of noncompliance procedures, see VI. of this Handbook.

3. Document compliance inspections with photos and written reports. An example is provided with Illustration 11. No nationwide form will be developed, but a copy of a form used successfully in some other States is provided for information purposed. Offices may adopt their own format, as appropriate.

4. If the operation appears to be completed and a Notice of Completion (NOC) has not been received, ask the operator for the status. A sample format for a letter that has been used successfully is provided in Illustration 12. It is a Request for Status of Operations Letter, mailed certified to the operator, stating that the NOC must be sent within 30 days.

B. Coordination.

1. Contact the State, other affected agencies, and land users, as appropriate, regarding any modification and/or noncompliance encountered during geophysical activity.

2. Document all coordination activities and provide copies to interested parties with a letter to the file.

IV. Operator Procedures for Completion. Within 30 days after completion of operations, including appropriate reclamation activities, the operator shall submit a Notice of Completion of Oil and Gas Exploration Operations (NOC), Form 3150-5 (Illustration 13) to the appropriate BLM office. A source point or field map (minimum scale of 1:24,000) showing source points, surveyed line locations, and any access routes on public lands shall be attached to the NOC.

V. BLM Procedures for Completion.

A. Administrative Procedures. Upon receipt of an NOC, the BLM will:

1. Date Stamp. Date stamp NOC, maps, and any other attachments.

2. Log. Log in Resource Area Oil and Gas Exploration Operations Log Control Register. Enter the information into ALMRS Case Recordation in accordance with State and Bureauwide guidance. The appropriate action codes for data entry are listed in Illustration 7.

B. Review.

1. Completeness. Check the NOC for completeness and adequacy of maps and information.

2. File. Attach the NOC to the case file.

3. Review. Determine if project has been inspected and released by the State or other agencies as appropriate.

C. Compliance Monitoring.

1. Response. Send the operator a Receipt of NOC Letter with a copy to the State or other agencies as appropriate. No nationwide form will be developed, but an example of a form letter successfully used by several offices is provided (Illustration 14) for information purposes. Offices may adopt their own format, as appropriate. If necessary schedule a final compliance inspection.

2. Inspection. Conduct a final inspection for compliance with the terms and conditions. Document the inspection by completing Compliance Inspection for Oil and Gas Exploration Operations (Illustration 11), and attach any necessary photographs.

Note: Final inspection must be completed within 30 days of receipt of the
OC unless weather conditions are such that an adequate inspection cannot be conducted within that timeframe (see 43 CFR 3151.2).

The Rocky Mountain Regional Solicitor's memorandum dated April 29, 1975,

states ". . . that an extension of the 90-day period is only permissible if weather conditions make it actually or practically impossible to carry out the required inspection within this time limit. The mandated time limit cannot be extended simply because BLM has a personnel shortgage [sic] which makes meeting the deadline difficult. If the opposite were true, the operator would have no way of knowing when he could expect the release of his bond."

If weather conditions delay completion of the final inspection beyond the 30-day time limit, the operator shall be notified when the inspection is rescheduled for completion.

Should the authorized officer fail to notify the operator of additional requirements within 90 days of the filing of the NOC, liability for that particular exploration operation shall automatically terminate. See 43 CFR 3154.3. A 75-day rotation call-up system shall be established in each office for NOC's so the 90-day notification requirement mentioned above will not be overlooked. If BLM is unable to conduct a final field inspection of the survey lines because of adverse weather or other unforeseeable situations, the geophysical operator will be notified in writing every 75 days by certified mail, return receipt requested. BLM will explain why the inspection was not conducted, give an anticipated date for completion, and a statement that bond liability is not released.

3. Compliance. If the operation is found to be in compliance with the terms and conditions during the compliance inspection, notify the operator. An example of an Inspection Notification Letter (Illustration 15) is provided. Send a copy to the State government if necessary. Enter the information into ALMRS Case Recordation in accordance with State and Bureauwide guidance. The appropriate action codes for data entry are listed in Illustration 7.

When noncompliance items are discovered, notify the operator verbally and then follow up with written notification by certified mail, return receipt requested. For a complete breakdown of noncompliance procedures, see Chapter VI of this Handbook.

VI. Noncompliance. Noncompliance includes trespass, violations of the terms and conditions, failure to meet reclamation or drill hole plugging standards, causing unnecessary degradation, and breaking Federal, State, or local laws. Upon discovery of noncompliance, the following procedures shall be followed.

A. Documentation. If the operation is found not to be in compliance during the compliance inspection, ensure that complete documentation, including photographs and necessary mitigation measures, is included in the case file.

B. Notification. Notify the operator by telephone within 5 days and follow up with a letter. The letter must specify the exact work that is required, timeframes to commence and complete the work, and that failure to perform the required work may result in attachment of the bond. This letter shall be sent by certified mail,

return receipt requested.

If the operator does not respond within the timeframes given in the notification, a copy of this letter shall be sent to the bonding company and client company, as applicable, by certified mail. A copy shall also be sent to the appropriate State agency.

C. Coordination. Notify appropriate agencies and land users of the noncompliance.

D. Loaded Shot Holes. When unsecured loaded shot holes, not in conformance with State or ATF standards, are encountered by a BLM employee or identified and reported to a BLM employee, the following procedures shall be followed, as appropriate, within 24 hours following the incident report:

1. File Search. Conduct a file search to identify the geophysical operator and probable date of the geophysical activity.

2. Location. Confirm the exact location, operator, and whether the noncompliance actually exists. Document with photographs and a narrative description of the site and the kind of activity.

3. Contact. Contact the operator by telephone. Provide a complete description of the incident and location of the explosives. Notify them of the need to deactivate the site.

4. Notification. Contact the Special Agent-in-Charge, State BLM office by telephone or radio. Provide a complete description of the incident and location of the explosives.

5. Deactivation. A BLM employee should be present at the deactivation activities.

6. Compensation. Monetary compensation shall be provided for explosive deactivation by the responsible geophysical operator or, if necessary, the operator's bond may be attached unless the operator performs the deactivation.

E. Reclamation. The terms and conditions of the approved NOI are considered met if there is evidence that the disturbed area is stable and that vegetation is or will become established to the same degree as the immediately adjacent area. Vegetation establishment normally takes two years or longer following reseeding. When BLM is waiting for vegetation to become established, bond liability is not released. A letter to the operator explaining the reason for the delay in bond release will be sent. If reclamation is inadequate the operator's bond should not be attached until all attempts to notify them of the need to correct a deficiency is exhausted.

F. Bond Attachment. If the operator fails to respond or fails to perform the

required work within the specified timeframe, notify the District and/or the State Office staffs that work with bond attachment as outlined in BLM Oil and Gas Manual Handbook 3104-1, Section X.

G. Inspection Notification. When the operation is found to be in compliance with the terms and conditions, notify the operator, and send a copy to the State, where appropriate.

Glossary of Terms

-A-

authorized officer: any employee of the Bureau of Land Management authorized through delegations of authority to perform the duties described in this Handbook. Usually, the Area Manager is the authorized officer.

-C-

casual use: activities that involve practices which do not ordinarily lead to any appreciable disturbance or damage to lands, resources, and improvements. For example, activities that do not involve use of heavy equipment or explosives and that do not involve vehicular movement except over established roads and trails are casual use. For the purpose of illustration in this Handbook, gravity or magnetic surveys, the placement of recording equipment devices, and activities that do not involve vehicle operations that would cause significant compaction or rutting are generally considered as casual use.

consultation: a process that involves informal discussions between BLM and the U. S. Fish and Wildlife Service (FWS) regarding the impact of an action on proposed species or proposed Critical Habitat and recommendations to minimize or avoid the adverse effects.

critical habitat: specific areas, designated by the Secretary of the Interior as part of the listing process concerning Threatened and Endangered species. Such areas are essential to the conservation of the species and may require special management considerations or protection. It also includes areas not occupied by the Threatened and Endangered species at the time of listing but which the Secretary has determined are essential to the conservation of the species. See 50 CFR Part 17 and 226.

-D-

deep holes: deep holes are defined, for the purposes of this document, as any hole that exceeds the conventional hole depths for geophysical shot hole acquisition. For most areas conventional depths are less than 500 feet, but in some areas

(e.g., portions of California and the overthrust belt of Wyoming) conventional shot-hole depths may be as much as 700 feet. Geophysical data collection may also occur in deeper holes for the purposes of velocity surveys or vertical seismic profiles.

-F-

Federal minerals: any lands where the minerals are owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management.

formal consultation: a component of the Endangered Species Act, Section 7 consultation process that commences with the BLM's written request for consultation after it has been determined that its action may affect listed species or Critical Habitats.

-G-

geophone (seismometer, jug): an instrument used to transform seismic energy into an electrical impulse. A "listening" device for seismic energy.

gravity method: a prospecting method that detects micro-variations in gravitational attraction caused by the differences in the density of various types of rock. The instrument used for gravity surveys is a small portable device called a gravimeter.

-H-

historic property: any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places under 36 CFR 60.4 or Section 101 (d)(6) of the 1992 amendments to the National Historic Preservation Act.

-I-

informal consultation: a component of the Endangered Species Act, Section 7 consultation process that includes all discussions, correspondence, etc., between the FWS and the BLM agency or the designated non-Federal representative prior to initiation of formal consultation.

-M-

magnetic method: this process is most commonly used for locating metallic ore bodies, but is also used in oil and gas exploration. Magnetic surveys use an instrument called a magnetometer to detect small magnetic anomalies caused by mineral variations in the earth's crust.

magnetotellurics method: a geophysical procedure that utilizes a magnetometer to measure variations in the earth's magnetic field caused by changes in magnetic properties of subsurface rocks.

-N-

Notice of Completion (NOC): the form or process by which a geophysical operator notifies the BLM that geophysical exploration operations, as approved under an application, have been completed in accordance with the terms and conditions of the approved application.

Notice of Intent (NOI): the form or process by which a geophysical operator requests authorization to conduct geophysical exploration on Federal lands.

-O-

oil and gas geophysical exploration: activity on the Federal lands relating to the search for evidence of oil and gas. It requires a physical presence upon the land and may result in disturbance to the land or other resources. It includes, but is not limited to, geophysical operations, and cross country transit of vehicles over such lands. It does not include core drilling for subsurface geologic information or drilling for oil and gas.

-P-

peak particle velocity: the maximum ground displacement measured at a specified distance from an energy source.

poulter method: this is a method that is similar to the drill or shot-hole method, except the charges are placed above the ground, to generate seismic waves that are recorded by a seismograph.

-R-

receiver: See geophone.

recording truck (doghouse): a vehicle containing the seismograph equipment for recording a geophysical survey in the field.

-S-

seismic reflection method: use of an energy source, usually either an explosive charge or vibroseis, to send acoustic energy into the earth. The energy is reflected from subsurface layers and recorded at the surface with geophones. The data collected are then processed by computer to create an image of the subsurface geology.

seismic survey, 2D: a seismic program carried out with shots (energy sources) and receivers (listening devices) arranged along the same line.

seismic survey, 3D: a seismic program with shots and receivers arranged in an areal pattern on the surface. Can vary considerable in dimension and distances between shots and receivers.

shot-hole method (via truck or helicopter): utilizes holes drilled in a variable spacing pattern by a truck mounted drill rig. The holes are usually less than 250 feet deep, with a diameter of 3.5 to 8 inches. An explosive charge is placed in the holes and detonated to generate seismic waves that are recorded by a seismograph. The helicopter portable drill rig method uses the same procedures as the truck mounted method, except the drill rig breaks down into components and is transported via helicopter. The maximum diameter of heliportable drill holes is 4 inches.

source point interval: the distance between adjacent locations where seismic energy is introduced into the earth. Usually try to keep constant along a seismic line.

surface disturbance: any physical disturbances that directly or indirectly impacts biological and physical surface resource values.

surface shots: See poulter method.

-T-

trespass: a trespass occurs when a geophysical operator conducts operations on public lands, other than casual use, without filing an NOI or having other legal authorization from the Bureau of Land Management.

-U-

undertaking: a project, activity, or program funded in whole or part, under the direct or indirect jurisdiction of a Federal agency, including:

1. Those carried out by or on behalf of the agency.
2. Those carried out with Federal financial assistance.
3. Those requiring a Federal permit, license, or approval.
4. Those subject to State or local regulations administered pursuant to a delegation or approval by a Federal agency.

-V-

velocity survey: geophysical information collected for the purpose of obtaining velocity information. Usually involves drilling a borehole 500 feet to 1000 feet in depth, placing geophones in the hole, and discharging an energy source adjacent to the hole. Alternatively, the energy source can be placed in the hole, with the

resultant seismic signal recorded by geophones placed on the surface. Velocity surveys are often conducted concurrently with or along planned, existing, or past seismic lines.

vertical seismic profile (VSP): a geophysical survey collected in a borehole using a receiver located in the hole and an energy source adjacent to the hole.

vibroseis method: one to six trucks or buggies usually work close together in a line with this method. The trucks are equipped with metal pads that vibrate the ground to produce acoustic waves. The reflected acoustic waves are recorded by a seismograph.

Illustration 2

Filing Procedures for Oil and Gas Geophysical Exploration on Public Lands

BLM Serial No.

State No.

1. Provide a Notice of Intent to Conduct Oil and Gas Geophysical Exploration Operations (Form 3150-4) containing the following information:

a. The permit number issued by the State to conduct seismic operations if available.

b. Company name and permanent mailing address.

c. Name and telephone number of local representative.

d. Crew/party number.

e. Line numbers/project name.

f. Type of exploration (please be specific): shot hole, vibroseis, surface shot, etc. If shot hole, include hole size, depth, charge, shots per mile, and State-required marks to be used on nonmetallic plugs.

g. Estimated date work will start.

h. A map showing the intended route of the seismic line(s). The map (minimum scale 1:100,000) must indicate public lands crossed.

i. Written approval must be obtained for use of a bulldozer, earthmoving

equipment, or vegetation removal. If such work is intended, submit two copies of an approval for use of earthmoving equipment.

2. Prior to starting exploration operations on public lands, the party chief/manager will attend a prework conference and sign the terms and conditions for the exploration project unless this requirement is waived by the authorized officer.

3. Notify the BLM at least 3 days, and no more than 14 days, before entering onto public lands. If weather or environmental conditions have changed, additional protection measures may be necessary.

4. Following completion of operations, reclamation, and compliance with the Terms and Conditions, promptly submit to the BLM:

a. A Notice of Completion of Oil and Gas Exploration Operations (Form 3150-5).

b. A topographic map (minimum scale 1:24,000) showing the actual route of the seismic line(s) and indicating public lands crossed.

5. If no actual operations were conducted, notification by letter to the authorized officer is needed.

Illustration 5

Model Format for Approval for Use of Earthmoving Equipment

BLM Serial No.

State No.

Company Name Subcontractor Address Address City State City State

Zip Code Telephone

Company Project Name

Equipment Operator

Telephone Number

Legal Description:

Approved Activity:

Use of crawler tractor without blade for towing and trail breaking.

Snow removal--provided the blade is equipped with shoes or skids that keep the blade a minimum of _____ inches above the soil surface.

Cutting and removal of trees or other vegetation.

Other (please specify):

Terms and Conditions:

This approval expires on (date) .

I hereby agree to conduct operations only as described above and as approved by the authorized officer.

Equipment Operator Date Crew Chief Date

Approved

Bureau of Land Management Date

Authorized Officer

Illustration 6

Checklist for Oil and Gas Geophysical Exploration

BLM Serial No.

State No.

Company

Party Chief Telephone

Bond Number Company Telephone

1. Date NOI Received and Stamped. 5-Day Call-up date assigned

2. Date operator notified of receipt of NOI (Form 3150-4). Any additional information needed.

3. Date environmental resource reviews requested.

Received

a. Cultural

b. Range

c. Wildlife, T&E Species

d. Wilderness/WSA

e. Other

4. Date environmental document completed.

5. Terms and conditions completed and ready for party chief signature.

6. Date prework conference held or Terms and Conditions mailed to operator for signature.

7. 15-day call-up date established following the scheduled starting date.

8. Date exploration operations started.

9. Date of inspection.

10. Date NOC received.

11. Date of inspection.

12. Date bond liability released.

Illustration 7

Listing of ALMRS (Case Recordation) Data Element (DE) 2910 Action Codes

Applicable to Geophysical Exploration in the Lower 48 States

CASE TYPE 315100 - O&G GEOPHYSICAL EXPL-EXCP AK

DE 2910 DE 2910

040 COMPL EXAM/RPT RQST/INIT 378 BOND PERIOD TERMINATED

041 COMPL EXAM/RPT COMPLETED 383 BOND RETURNED

042 CASE SENT TO 387 CASE ESTABLISHED #

103 ADDTL INFO RECD 393 DEC ISSUED

104 ADDTL INFO RQSTD 399 BOND NO LONGER REQUIRED

114 AMEND/CORR APLN RECD 421 PLAN OPER/EXPL/DEV FILED

115 AMEND/CORR APLN RQSTD 422 PLAN OPER/EXPL/DEV APPV

116 AMENDMENT APPV 423 PLAN OPER/EXPL/DEV REJ

119 APPEAL DISMISSED 424 PLAN OPER/EXPL/DEV WDN

120 APPEAL FILED 441 RECONSIDERATION RQSTD

122 EXT OF TIME RQSTD 451 DEFAULT DETERMINED

125 APLN REJ/DENIED 452 DEFAULT CORRECTION REQD

126 APLN REJ/DEN IN PART 453 DEFAULT CORRECTED

127 ACTION SUSPENDED 463 BOND TERMINATION DENIED

130 APLN WITHDRAWN 474 NOTICE OF NONCOMPLIANCE

131 APLN WITHDRAWN IN PART 477 BOND ADJUSTMENT REQUIRED

134 APPROVAL GIVEN # 486 PMT BY SURETY/PRINCIPAL

136 STAY REQUESTED 487 REMAND REQUESTED

137 STAY GRANTED 678 SUSP LIFTED

138 STAY DENIED 748 PROTEST WITHDRAWN

149 CASE RECEIVED FROM 885 CASE DESTROYED

163 CASE SENT TO NARA 909 BOND ACCEPTED

186 DEBT DCLRD UNCOLLECTIBLE 910 REPORT REQUESTED

188 DEC VACATED/RESCINDED 911 REPORT RECEIVED

199 CANCELED 930 APPEAL WITHDRAWN

200 CANCELED IN PART 949 PROTEST UPHELD

203 EXT OF TIME GRANTED 951 EXT OF TIME TERMINATED

228 EXT OF TIME DENIED 967 CLOSED WITHOUT ACTION

247 FUTURE ACTION SUSPENSE 970 CASE CLOSED #

298 PROTEST DISMISSED 974 AUTOMATED RECORD VERIF

299 PROTEST FILED 992 RIDER FILED

349 CASE RECALLED 993 RIDER ACCEPTED

361 DEC AFFIRMED 994 RIDER UNACCEPTABLE

365 DEC REMANDED 995 RIDER RETURNED

366 DEC REVRSD & REMANDED

375 PROTEST SUSPENDED

376 BOND FILED

377 BOND TERMINATION RQSTD

Mandatory entry of action code required.

Illustration 8

Receipt of Notice of Intent Letter

BLM Serial No.

State No.

(Date)

Dear :

The enclosed Notice of Intent to Conduct Oil and Gas Geophysical Exploration Operations was received in this office on (date) . This project has been assigned Serial Number .

No further information is required at this time. The terms and conditions will be ready for your party chief's signature on (date) .

The following additional information is required prior to commencing operations:

If available, send the permit number issued by the State to conduct a seismic operation.

Submit Proof of Bonding for Oil and Gas Exploration (Form 3000-4a) or a copy of your State or nationwide bond.

Send a letter authorizing your company to act as an agent for use of this exploration project. Send a copy to their bonding company.

A map (minimum scale of 1:100,000) of the seismograph line(s) indicating the public lands crossed.

Significant cultural resources listed or eligible for inclusion in the National Register are likely to occur along portions of the proposed route of the survey. Prior to conducting the proposed geophysical exploration operations, a Class III Cultural Resource Inventory shall be completed on the following lands:

The purpose of such an avoidance survey is to ensure that geophysical operations will be offset from such cultural resources by an appropriate distance. The (Area) BLM archaeologist will be able to schedule and conduct this survey by (date) . If this timeframe does not meet your needs, you may have an archaeologist with a current Federal Antiquities Permit conduct this survey and submit the report to the authorized officer.

The portions of the geophysical survey route that are not affected by this cultural resource evaluation may be completed when cleared by the authorized officer.

An evaluation of your geophysical exploration project in light of existing information indicates that threatened or endangered species or their critical habitat have been identified along the proposed route of the survey, and that such species or habitat may be affected by your action. That data indicates it is necessary to offset the type of survey you have proposed by feet to avoid adversely affecting the species or habitat. Based on that information, the following lands where the species or habitat are present must be inspected prior to starting operations to identify the locations where operations must be offset from such species and their habitat by an appropriate distance:

The (Area) BLM wildlife biologist will be able to complete this inspection by (date) . If this timeframe does not meet your needs, you may have a qualified environmental consultant conduct the inspection and submit a report identifying the locations and proposed offsets to the authorized officer.

The portions of the geophysical survey route that are not affected by this cultural resource evaluation may be completed when cleared by the authorized officer.

Please refer to the assigned Serial Number in all correspondence. If you have any questions concerning this matter, please contact at , or the above address.

Sincerely,

Area Manager

Enclosure

Illustration 9

Cultural Resource Procedures for Geophysical Operations

Consult BLM Manual Section 3150 for a discussion of factors affecting whether or not a cultural resource inventory will be necessary for a given geophysical operation. The BLM, in consultation with the State Historic Preservation Officer (SHPO) or in accordance with State-specific programmatic agreements, will determine the need for a cultural survey as well as the type and intensity of the inventories when they are required.

A lack of inventory data shall not, in itself, cause the BLM to recommend to the SHPO that a cultural resource survey is necessary. The BLM in its consultations with the SHPO will take the position that, because the proposed undertaking cannot affect historic properties, no cultural resource inventories will be required unless historic properties are:

1. Known or are likely to exist within the proposal's area of potential effect, and

2. The type of operation is likely to result in changes in character or use of such historic properties.

The determination of the likelihood that unidentified historic properties exist in the area of potential effect must be based on direct comparisons with existing inventory information of areas with similar environmental characteristics. These characteristics include but are not limited to slope, aspect, vegetation, land form, geology, and soils. The factors described in the decisionmaking process of BLM Manual Section 3150 shall be used when determining the level of cultural resource inventory.

If the timeframes for the BLM to complete cultural resource surveys are unacceptable to the operator, the operator has the option of providing the necessary surveys. If such cultural surveys require the use of cultural resource

permittees, the operator shall be responsible for issuing and managing the contract with the cultural resource permittee. The cultural resource permittee shall have a current cultural resource use permit from the BLM. The BLM will still retain the responsibility for all official Section 106 consultations with the SHPO and the Advisory Council on Historic Preservation.

When historic properties are to be avoided during a geophysical undertaking, procedures for SHPO consultation regarding determinations of effect and eligibility will follow either applicable Programmatic Agreement (PA) procedures or 36 CFR 800. If avoidance of adverse effects to historic properties is not feasible, consultation with the SHPO regarding treatment will follow either applicable PA procedures or 36 CFR 800.

Where a Class III survey has been determined necessary, it will cover 50 feet on either side of center line or at least 25 feet beyond the limits of anticipated vehicular activities/surface disturbance created by projects that affect more than a 100-foot-wide survey area. A minimum of a 100-foot- wide survey is required. Additional inventory may be required for the shot-hole or poulter exploration methods in areas where historic properties may be affected beyond these limits (see Illustration 9). When it is necessary for vehicles to drive outside the area that received the original cultural inventory, whether because of topographic obstacles, manmade barriers, or to avoid a historic property, the path used to drive around the problem area will also be surveyed to the same standards employed during the original cultural resource survey described above. The operator may choose to flag the centerline and/or outer boundaries of the project area before the cultural survey is performed.

A Class III survey will not be performed until at least 70 percent of the immediate area to be inventoried is snow-free. In those conditions where a Class III is otherwise required, geophysical operations may be conducted without a Class III inventory if the ground is frozen or there is sufficient snow cover to avoid rutting of the underlying soil and those conditions will exist during the time of the operation. This determination should be made in consultation with the SHPO or pursuant to an appropriate PA.

Typical effects from common geophysical operations will provide guidance for cultural resource reviews. For the vibroseis method, consideration should be given to adverse effect through compaction and subsequent erosive rutting by heavy vehicular traffic, generally including above-ground structural features and subsurface sites in areas of wet, subirrigated, or loosely consolidated soils such as, but not restricted to, sand dunes. For the shot-hole method, consideration should be given to adverse effect through the passage of a heavy drill truck (if such is used), vibrations from high particle velocities to sites or site matrices without elasticity, and direct blast effects from shallow shot holes (5 to 10 feet below the surface) on properties buried at that depth (charges placed more than 10 feet below the surface are unlikely to affect buried cultural properties). For the poulter method, consideration should be given to adverse effect from direct blast

effect or air overpressure.

Illustration 10

Resource Protection Offsets for Cultural Resource

Structures and Other Facilities

This addresses the immediate physical effects of vibrations on standing structures and rock art. The objective of developing the tables that follow is to establish recommendations for appropriate operating parameters. If the operator proposes to operate closer to a cultural resource structure or other facility than the identified distances, the burden is on the operator to demonstrate insignificant effects on those resources that BLM has previously identified along the survey route. If the BLM or other interested parties wish the operator to conduct operations farther from an identified resource, the burden is on the BLM or other interested party to demonstrate that an extended distance is necessary to provide adequate protection for such identified resources.

Peak particle velocities at the base of standing structures and rock art should not exceed 0.75 in./sec. (suggested maximum for drywall structures as published by the Office of Surface Mining Reclamation and Enforcement). Similarly, 140 dB is the OSHA-established maximum for impulsive sound. The following tables were derived from studies on effects to commonly investigated contemporary structures (for example, houses, water wells, pipelines, and springs) with additional buffers built in to protect more fragile cultural resources. Normal environmental conditions to which these resources are subjected on a daily basis and which cause similar effects include wind, temperature changes, humidity changes, and vibrations from aircraft, vehicle, and train traffic. It is unnecessary to add additional buffers to the established distances for either cultural resources or other facilities. Distances may need adjustment in saturated soils or extreme weather conditions. Under those circumstances, the BLM will be responsible for demonstrating that extended distances are needed to protect the resource.

Whereas particle velocities generated by dynamite are primarily a function of distance, shot-hole depth, and charge size, particle velocities generated by vibroseis activity are the result of many complex interacting factors. These factors include source frequency bandwidth, sweep length, type of sweep, size and make of vibrators, number of vibrators, orientation and configuration of vibrators, source components (compressional or shear), and drive level. These factors in turn will be affected by soil types and seasonal conditions. It is not possible to devise a simple chart that takes all of these factors into account. Based on studies of vibration activity, a distance of 300 feet, under normal operating conditions, is recommended to ensure that the 0.75 in./sec. threshold will not be exceeded. As discussed in paragraph one, the burden of proof for increasing or decreasing this

suggested distance is the responsibility of the agency or interested party wishing to make the change.

The tables below reflect direct effects only. Additional information on vibration sources and effects can be found in Blasting Guidance Manual, March 1987, from the Office of Surface Mining Reclamation and Enforcement.

TABLE I: RECOMMENDED SAFE DISTANCES FROM SURFACE SHOTS TO CULTURAL RESOURCE STRUCTURES AND

OTHER FACILITIES

Maximum decibels at these distances will not exceed 140 DB under normal conditions. This Table uses a scaled distance of 470.

CHARGE	.33	.5	1	3	5	10	15	20	30	40	50	75
DISTANCE	325	373	470	678	804	1013	1159	1276	1460	1607	1731	1982

TABLE II: RECOMMENDED SAFE DISTANCES FROM BURIED SHOTS TO CULTURAL RESOURCE STRUCTURES AND OTHER FACILITIES

Under normal conditions peak particle velocity at these distances will be below 0.75 in/sec. This Table uses a scaled distance of 65.

	200	-	-	-	-	-	47	153	211	295	359	414	462	526
	225	-	-	-	-	-	-	113	184	276	344	401	450	516
	250	-	-	-	-	-	-	30	148	253	326	386	437	504
	275	-	-	-	-	-	-	-	94	226	306	368	422	491
	300	-	-	-	-	-	-	-	-	192	281	348	404	476
	325	-	-	-	-	-	-	-	-	145	252	325	385	460
	350	-	-	-	-	-	-	-	-	65	216	298	362	441
	375	-	-	-	-	-	-	-	-	-	168	266	336	420
	400	-	-	-	-	-	-	-	-	-	95	226	306	396
	450	-	-	-	-	-	-	-	-	-	-	94	226	338
	500	-	-	-	-	-	-	-	-	-	-	-	59	259
	550	-	-	-	-	-	-	-	-	-	-	-	-	120
	600	-	-	-	-	-	-	-	-	-	-	-	-	-
	650	-	-	-	-	-	-	-	-	-	-	-	-	-
	700	-	-	-	-	-	-	-	-	-	-	-	-	-
	750	-	-	-	-	-	-	-	-	-	-	-	-	-
	800	-	-	-	-	-	-	-	-	-	-	-	-	-

* Some charge sizes, although safe from a distance standpoint, may be more prudently detonated in deeper boreholes.

- For the depth and charge size listed, no surface location should experience a peak particle velocity over 0.75 in/sec.

Illustration 11

Compliance Inspection for Oil and Gas Geophysical Exploration Operations

BLM Serial No.

State No.

Resource Area: Date of Application:

District: Date of NOC:

Type of Operation: Date of Inspection:

Inspection Location:

Deficiencies Noted:

Recommended Actions:

Remedial Action Taken:

Date Operator Notified:

Date Deficiencies Corrected:

Inspected By: Date

Illustration 12

Request for Status of Operations

BLM Serial No.

State No.

(Date)

Dear :

A Notice of Intent to Conduct Oil and Gas Geophysical Exploration Operations (copy enclosed) was filed in our office on (date) for Serial Number .

If the exploration operations and reclamation have been completed and the Terms and Conditions complied with, please submit the enclosed Notice of Completion of Oil and Gas Geophysical Exploration Operations (Form 3150-5) along with a copy of your shot point or field map (minimum scale 1:24,000).

If the operations were not conducted, please notify us by return mail.

Please refer to the above serial number in all correspondence. If you have any questions, please contact _____ at _____ or the above address.

Sincerely,

Area Manager

Enclosure(s)

Illustration 14

Example of a Receipt of Notice of Completion Letter

BLM Serial No.

State No.

(Date)

Dear :

Your Notice of Completion for Oil and Gas Geophysical Exploration Operations concerning Serial Number was received in this office on (date) .

These lines are scheduled for inspection for compliance with the provisions listed on the Notice and in the terms and conditions applied to your NOI signed by (Crew Chief) on (date) . You will be notified regarding the findings of our field inspection by (date) .

Existing weather conditions have not allowed us to inspect your exploration project for compliance with the terms and conditions applied to your NOI and signed by (Crew Chief) on (date) . Weather permitting, we will inspect these lines by (date) and you will be notified of our findings.

The information you submitted was inadequate or incomplete. We need the following information before we can schedule this exploration project for inspection.

Submit a shot point or field maps showing actual line locations, shot points, and any access routes. The map(s) must be at a minimum scale of 1:24,000 (7.5-minute USGS quadrangle or equivalent). If reproductions are used, they must be of good quality and legible. Public lands that are crossed must be indicated.

Submit a copy of the "Hole Plugger's Log" describing each hole for all shot lines, i.e., whether holes were wet or dry, static water level if appropriate, any flowing holes, breached or caved holes, volume of bentonite used per hole, any lost hole locations, etc.

(Note: This need not be requested for each survey.)

If you have any questions concerning this case, please contact at , or the above address.

Sincerely,

Area Manager

Illustration 15

Example of an Inspection Notification Letter

BLM Serial No.

State No.

(Date)

Dear :

We received your Notice of Completion for Oil and Gas Geophysical Exploration Operations (NOC) on (date) , concerning operations conducted under the NOI to Conduct Oil and Gas Geophysical Exploration Operations, Serial Number , dated , located in the Resource Area of the District.

The public lands over which you conducted your operations were inspected for compliance with the provisions listed on the NOI and the terms and conditions on (date) .

It has been determined that:

The terms and conditions concerning the above geophysical operations have been complied with to the extent that a surface examination can disclose. You are hereby released from bond liability for causes of action accruing after this date in connection with operations conducted under the cited NOI to Conduct Oil and Gas Exploration Operations. This does not release you from civil or criminal liability for failure to comply with the terms and conditions of the NOI.

You have not complied with the terms and conditions attached to the NOI. The corrective actions required are listed below. Please notify this office when the required actions have been completed. In accordance with 43 CFR 3154.3, your bond obligation will not be released until the listed deficiencies have been corrected.

If you have any questions on this matter, please contact at , or the above address.

Sincerely,

Area Manager